

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)Date of mailing (day/month/year)  
02 May 2000 (02.05.00)

From the INTERNATIONAL BUREAU

To:

BROWN, Andrew, Stephen  
Global Intellectual Property  
AstraZeneca UK Limited  
Mereside, Alderley Park  
Macclesfield  
Cheshire SK10 4TG  
ROYAUME-UNIApplicant's or agent's file reference  
PHM 70408/WO

## IMPORTANT NOTIFICATION

International application No.  
PCT/GB99/03370International filing date (day/month/year)  
11 October 1999 (11.10.99)

## 1. The following indications appeared on record concerning:

 the applicant     the inventor     the agent     the common representative

Name and Address  BROWN, Andrew, Stephen Astrazeneca plc Global Intellectual Property, Patents Mereside, Alderley Park Macclesfield Cheshire SK10 4TG United Kingdom	State of Nationality	State of Residence
	Telephone No. 01625 514620	
	Facsimile No. 01625 583358	
	Teleprinter No.	

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

 the person     the name     the address     the nationality     the residence

Name and Address  BROWN, Andrew, Stephen Global Intellectual Property AstraZeneca UK Limited Mereside, Alderley Park Macclesfield Cheshire SK10 4TG United Kingdom	State of Nationality	State of Residence
	Telephone No. 01625 514304	
	Facsimile No. 01625 583358	
	Teleprinter No.	

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input checked="" type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input type="checkbox"/> the elected Offices concerned
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  I. Britel  Telephone No.: (41-22) 338.83.38
---	---

## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)Date of mailing (day/month/year)  
02 May 2000 (02.05.00)

From the INTERNATIONAL BUREAU

To:

BROWN, Andrew, Stephen  
Global Intellectual Property  
AstraZeneca UK Limited  
Mereside, Alderley Park  
Macclesfield  
Cheshire SK10 4TG  
ROYAUME-UNIApplicant's or agent's file reference  
PHM 70408/WO

## IMPORTANT NOTIFICATION

International application No.  
PCT/GB99/03370International filing date (day/month/year)  
11 October 1999 (11.10.99)

1. The following indications appeared on record concerning:

 the applicant     the inventor     the agent     the common representative

Name and Address  ZENECA LIMITED 15 Stanhope Gate London W1Y 6LN United Kingdom	State of Nationality GB	State of Residence GB
Telephone No.		
Facsimile No.		
Teleprinter No.		

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

 the person     the name     the address     the nationality     the residence

Name and Address  ASTRAZENECA UK LIMITED 15 Stanhope Gate London W1Y 6LN United Kingdom	State of Nationality GB	State of Residence GB
Telephone No.		
Facsimile No.		
Teleprinter No.		

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

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<input type="checkbox"/> the International Searching Authority	<input type="checkbox"/> the elected Offices concerned
<input type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  I. Britel  Telephone No.: (41-22) 338.83.38
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## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

Date of mailing (day/month/year) 18 September 2000 (18.09.00)	From the INTERNATIONAL BUREAU
--	-------------------------------

To:

BROWN, Andrew, Stephen  
AstraZeneca  
Global Intellectual Property  
P.O. Box 272  
Mereside, Alderley park  
Macclesfield, Cheshire SK10 4GR  
ROYAUME-UNI

Applicant's or agent's file reference PHM 70408/WO	<b>IMPORTANT NOTIFICATION</b>
International application No. PCT/GB99/03370	International filing date (day/month/year) 11 October 1999 (11.10.99)

## 1. The following indications appeared on record concerning:

the applicant     the inventor     the agent     the common representative

Name and Address  ASTRAZENECA UK LIMITED 15 Stanhope Gate London W1Y 6LN United Kingdom	State of Nationality GB	State of Residence GB
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

the person     the name     the address     the nationality     the residence

Name and Address  ASTRAZENECA AB S-151 85 Södertälje Sweden	State of Nationality SE	State of Residence SE
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  I. Britel  Telephone No.: (41-22) 338.83.38
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## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

Date of mailing (day/month/year)  
18 September 2000 (18.09.00)

From the INTERNATIONAL BUREAU

To:

BROWN, Andrew, Stephen  
AstraZeneca  
Global Intellectual Property  
P.O. Box 272  
Mereside, Alderley park  
Macclesfield, Cheshire SK10 4GR  
ROYAUME-UNI

Applicant's or agent's file reference  
PHM 70408/WO

## IMPORTANT NOTIFICATION

International application No.  
PCT/GB99/03370

International filing date (day/month/year)  
11 October 1999 (11.10.99)

1. The following indications appeared on record concerning:

the applicant     the inventor     the agent     the common representative

Name and Address  BROWN, Andrew, Stephen Global Intellectual Property AstraZeneca UK Limited Mereside, Alderley Park Macclesfield Cheshire SK10 4TG United Kingdom	State of Nationality	State of Residence
	Telephone No.	
	01625 514304	
	Facsimile No.	
	01625 583358	
	Teleprinter No.	

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

the person     the name     the address     the nationality     the residence

Name and Address  BROWN, Andrew, Stephen AstraZeneca Global Intellectual Property P.O. Box 272 Mereside, Alderley park Macclesfield, Cheshire SK10 4GR United Kingdom	State of Nationality	State of Residence
	Telephone No.	
	01625 514304	
	Facsimile No.	
	01625 583358	
	Teleprinter No.	

3. Further observations, if necessary:

4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	Authorized officer  I. Britel  Telephone No.: (41-22) 338.83.38
---	---

## INTERNATIONAL COOPERATION TREATY

PCT

SG

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>PHM 70408/WO</b>	<b>FOR FURTHER ACTION</b> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. <b>PCT/GB 99/03370</b>	International filing date (day/month/year) <b>11/10/1999</b>	(Earliest) Priority Date (day/month/year) <b>13/10/1998</b>
Applicant <b>ZENECA LIMITED et al.</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing :
  - contained in the international application in written form.
  - filed together with the international application in computer readable form.
  - furnished subsequently to this Authority in written form.
  - furnished subsequently to this Authority in computer readable form.
  - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
  - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2.  Certain claims were found unsearchable (See Box I).

3.  Unity of invention is lacking (see Box II).

4. With regard to the title,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

None of the figures.

# INTERNATIONAL SEARCH

International Search Report No.

PCT/GB 99/03370

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7	G01N30/00	G01N27/447	B01L3/00
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B01J19/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N B01L B01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>MANZ A ET AL: "ELECTROOSMOTIC PUMPING AND ELECTROPHORETIC SEPARATIONS FOR MINIATURIZED CHEMICAL ANALYSIS SYSTEMS" JOURNAL OF MICROMECHANICS &amp; MICROENGINEERING, US, NEW YORK, NY, vol. 4, 1994, page 257-265 XP000607370 ISSN: 0960-1317 paragraph '01.3!</p>	1-3
Y	<p>US 5 716 852 A (BRODY JAMES P ET AL) 10 February 1998 (1998-02-10) cited in the application the whole document</p>	1-9
Y	<p>WO 98 09161 A (UNIV CALIFORNIA) 5 March 1998 (1998-03-05) abstract; claim 1</p>	1-9

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the International filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the International filing date but later than the priority date claimed

"T" later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the International search

Date of mailing of the International search report

13 January 2000

24/01/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5618 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.  
Fax: (+31-70) 340-3016

Authorized officer

Brison, O

## INTERNATIONAL SEARCH REPORT

International

..1 No

PCT/GB 95/03370

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 98 00231 A (BOUSSE LUC J ;CALIPER TECHN CORP (US); KOPF SILL ANNE R (US); PARC) 8 January 1998 (1998-01-08) claim 5	9
A	WO 96 04547 A (LOCKHEED MARTIN ENERGY SYS INC ;RAMSEY J MICHAEL (US)) 15 February 1996 (1996-02-15) the whole document	1-9
A	WO 96 12541 A (BULL ADRIAN JAMES ;SHAW JOHN EDWARD ANDREW (GB); WESTWOOD LYN (GB)) 2 May 1996 (1996-05-02) cited in the application the whole document	1,4,8
A	WO 97 00442 A (UNIV WASHINGTON) 3 January 1997 (1997-01-03) cited in the application the whole document	1,4
X	COWEN S: "SMALL IS BEAUTIFUL" CHEMISTRY AND INDUSTRY. CHEMISTRY AND INDUSTRY REVIEW, GB, CHEMICAL SOCIETY. LETCWORTH, no. 19, 5 October 1998 (1998-10-05), page 792-793 XP000779581 ISSN: 0009-3068 the whole document	1-3
A	US 5 643 738 A (CHERUKURI SATYAM CHOURDARY ET AL) 1 July 1997 (1997-07-01) the whole document	1,4

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/03370

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5716852	A	10-02-1998	AU 3877797 A EP 0890094 A WO 9739338 A US 5972710 A	07-11-1997 13-01-1999 23-10-1997 26-10-1999
WO 9809161	A	05-03-1998	US 5906723 A AU 4090597 A EP 0922218 A	25-05-1999 19-03-1998 16-06-1999
WO 9800231	A	08-01-1998	US 5942443 A AU 3499097 A CA 2258489 A EP 0907412 A	24-08-1999 21-01-1998 08-01-1998 14-04-1999
WO 9604547	A	15-02-1996	AU 701348 B AU 3150895 A CA 2196429 A CN 1168720 A EP 0775306 A JP 10507516 T US 5858195 A	28-01-1999 04-03-1996 15-02-1996 24-12-1997 28-05-1997 21-07-1998 12-01-1999
WO 9612541	A	02-05-1996	AT 175362 T AU 695237 B AU 3703095 A AU 699883 B AU 3703195 A CA 2203282 A CA 2203283 A DE 69507157 D DE 69507157 T EP 0787029 A EP 0790849 A ES 2130659 T WO 9612540 A JP 10507406 T JP 10507962 T US 5961832 A	15-01-1999 13-08-1998 15-05-1996 17-12-1998 15-05-1996 02-05-1996 02-05-1996 18-02-1999 02-09-1999 06-08-1997 27-08-1997 01-07-1999 02-05-1996 21-07-1998 04-08-1998 05-10-1999
WO 9700442	A	03-01-1997	AU 6541596 A CA 2222126 A EP 0839318 A JP 11508182 T US 5932100 A	15-01-1997 03-01-1997 06-05-1998 21-07-1999 03-08-1999
US 5643738	A	01-07-1997	US 5585069 A AU 705351 B AU 4152396 A AU 705659 B AU 4233796 A CA 2204912 A CA 2205066 A EP 0791238 A EP 0808456 A JP 11500602 T WO 9615450 A WO 9615576 A US 5681484 A	17-12-1996 20-05-1999 06-06-1996 27-05-1999 06-06-1996 23-05-1996 23-05-1996 27-08-1997 26-11-1997 19-01-1999 23-05-1996 23-05-1996 28-10-1997

**UNAL SEARCH REPORT**

Information on patent family members

International Application No

PCT/GB 99/03370

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5643738 A		US 5593838 A	14-01-1997
		US 5846396 A	08-12-1998
		US 5985119 A	16-11-1999
		US 5755942 A	26-05-1998
		US 5863708 A	26-01-1999
		US 5858804 A	12-01-1999

# INTERNATIONAL SEARCH REPORT

Int'l Application No  
PCT/GB 99/03370

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 G01N30/00 G01N27/447 B01L3/00 B01J19/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 G01N B01L B01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	MANZ A ET AL: "ELECTROOSMOTIC PUMPING AND ELECTROPHORETIC SEPARATIONS FOR MINIATURIZED CHEMICAL ANALYSIS SYSTEMS" JOURNAL OF MICROMECHANICS & MICROENGINEERING, US, NEW YORK, NY, vol. 4, 1994, page 257-265 XP000607370 ISSN: 0960-1317 paragraph '01.3! ---	1-3
Y	US 5 716 852 A (BRODY JAMES P ET AL) 10 February 1998 (1998-02-10) cited in the application the whole document ---	1-9
Y	WO 98 09161 A (UNIV CALIFORNIA) 5 March 1998 (1998-03-05) abstract; claim 1 ---	1-9
		-/--

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

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- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

13 January 2000

24/01/2000

Name and mailing address of the ISA

European Patent Office, P B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl.  
Fax: (+31-70) 340-3016

Authorized officer

Brison, O

## INTERNATIONAL SEARCH REPORT

International Application No

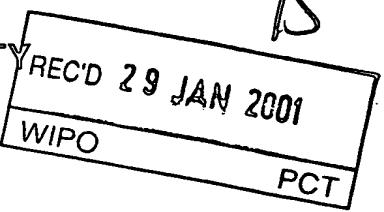
PCT/GB 99/03370

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 98 00231 A (BOUSSE LUC J ;CALIPER TECHN CORP (US); KOPF SILL ANNE R (US); PARC) 8 January 1998 (1998-01-08) claim 5 ---	9
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A	WO 96 12541 A (BULL ADRIAN JAMES ;SHAW JOHN EDWARD ANDREW (GB); WESTWOOD LYN (GB)) 2 May 1996 (1996-05-02) cited in the application the whole document ---	1,4,8
A	WO 97 00442 A (UNIV WASHINGTON) 3 January 1997 (1997-01-03) cited in the application the whole document ---	1,4
X	COWEN S: "SMALL IS BEAUTIFUL" CHEMISTRY AND INDUSTRY. CHEMISTRY AND INDUSTRY REVIEW, GB, CHEMICAL SOCIETY. LETCWORTH, no. 19, 5 October 1998 (1998-10-05), page 792-793 XP000779581 ISSN: 0009-3068 the whole document -----	1-3
A	US 5 643 738 A (CHERUKURI SATYAM CHOURDARY ET AL) 1 July 1997 (1997-07-01) the whole document -----	1,4

## PATENT COOPERATION TREATY

PCT



## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

## (PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>PHM 70408/WO</b>	<b>FOR FURTHER ACTION</b>		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. <b>PCT/GB99/03370</b>	International filing date (day/month/year) <b>11/10/1999</b>	Priority date (day/month/year) <b>13/10/1998</b>	
International Patent Classification (IPC) or national classification and IPC <b>G01N30/00</b>			
Applicant <b>ZENECA LIMITED et al.</b>			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 7 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I     Basis of the report
- II     Priority
- III     Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV     Lack of unity of invention
- V     Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI     Certain documents cited
- VII     Certain defects in the international application
- VIII     Certain observations on the international application

Date of submission of the demand <b>02/04/2000</b>	Date of completion of this report <b>25.01.2001</b>
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer <b>Purdie, D</b> Telephone No. +49 89 2399 2187



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/03370

## I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).:*)  
**Description, pages:**

1-14                   as originally filed

### Claims, No.:

1-9                   as originally filed

### Drawings, sheets:

1/4-4/4               as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description,           pages:
- the claims,               Nos.:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/03370

the drawings,      sheets:

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)                  Yes: Claims 8,9  
                                No: Claims 1-7

Inventive step (IS)           Yes: Claims  
                                No: Claims 1-9

Industrial applicability (IA) Yes: Claims 1-9  
                                No: Claims

2. Citations and explanations  
see separate sheet

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
see separate sheet

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
see separate sheet

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03370

**Re Item V**

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

Reference is made to the following documents:

D1: US-A-5 716 852 (BRODY JAMES P ET AL) 10 February 1998 (1998-02-10)  
cited in the application

D2: WO 98 00231 A (BOUSSE LUC J ;CALIPER TECHN CORP (US); KOPF SILL ANNE R (US); PARC) 8 January 1998 (1998-01-08)

Document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (see col. 7, line 18 - col. 8, line 8) a system suitable for the determination of at least one physical property (e.g. the diffusion rate) of a compound which comprises:

- (i) a microfabricated device having an internal surface defining a conduit ("flow channel 100") through which fluid may flow, compound ("small molecules of interest") being present in the fluid,
- (ii) the conduit containing an agent ("indicator stream 70") to which the fluid ("sample stream 80") is brought into contact,
- (iii) a detector ("indicator substance" - see, e.g., col. 8, lines 1-2) for measuring the amount of compound or compound derivative present within the fluid or the agent or both; wherein partitioning of the compound through a partition interface ("diffused indicator area 110") formed between the fluid and the agent and presence of compound in either the fluid or agent or both is measured to determine the physical property.

Therefore, clarity problems notwithstanding, claim 1 is not novel (Article 33(1), (2) PCT).

Clarity problems notwithstanding, claim 4 also appears to be anticipated by D1 which discloses a method for the measurement (see claim 4, para iii) of the amount of compound present (column 7, line 18 - col. 8, line 8). Thus claim 4 does not appear to

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03370

be novel.

The following claims also are not novel:

- Claim 2 see, e.g., D1 col. 7, lines 37-49.
- Claim 3 see, e.g., D1 col. 9, lines 16-19 and Fig. 3.
- Claim 5 see, e.g., D1 col. 3, lines 38-45.
- Claim 6 "diffused indicator area 110" is a liquid.
- Claim 7 see, e.g., D1 col. 7, line 62 - col. 8, line 8.

In addition, the following claims are not inventive:

Claim 8 Although the two fluids represented in Fig. 1 of D1 appear to mix in the "diffused indicator area 110", the skilled man would realise that use of non-miscible fluids would not a priori effect the diffusion upon which the method depends. Use of non-miscible fluids is thus simply an obvious and consequently non-inventive choice.

Claim 9 The use of a "barrier pug" or "spacer fluid region" to separate different samples in such an analysis device is disclosed in D2 (see, e.g., p34, lines 13-19). Its inclusion here certainly cannot be considered inventive.

**Re Item VII**

**Certain defects in the international application**

The term MW on line 7 of page 9 should have been clarified.

On page 10 of the description (lines 16-20), figures 1 and 2 are referred to in order to clarify a point. It is not clear, however, in what way figures 1 and 2 of the application are relevant to the text.

**Re Item VIII**

**Certain observations on the international application**

Contrary to the requirements of Article 6 PCT, the claims are not clear:

The invention appears to be directed towards the determination of a limited sort of physical property, such as those listed on p2 of the description (lines 11-20). It is not apparent that the invention could be used to detect such physical properties such as conductivity, specific heat coefficient, or magnetic permeability, to take three examples.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03370

The definition of the invention as being one for the determination (claim 1) or measurement (claim 4) of "at least one physical property" thus seems to be over general.

**Claim 1**

The "system" of claim 1 is regarded as an apparatus. As the claim is worded, neither the "agent" nor the "fluid" appears to be a feature of the claim, although both are essential to the operation of the system. The line of the claim starting with (ii), thus does not appear to contain any features, but rather relates to a way of using the apparatus of claim 1. This results in a lack of clarity.

The nature of the agent is not clear. It appears from the description that the agent is, at least preferably, also a fluid (see, e.g., line 26, p3). This should be explicitly specified in the claim, in order to distinguish from an agent which is present somehow in the material of the microfabricated device.

It is not clear what is meant by "compound derivative" (line 11), especially as it is specified in line 7 that it is the compound that is present in the fluid.

The last three lines of the claim are not clear. It appears that both the "partitioning of the compound through a partition interface formed between the fluid and the agent" and "the presence of compound in either the fluid or agent or both" are measured. However, the functional statements do not enable the skilled person to determine which technical features are necessary to perform the stated functions, and, indeed, the stated functions are not clear in themselves.

**Claim 4**

It appears that the fluid should be provided through the conduit, rather than "through an internal surface".

It is not apparent that the words "to allow ... the fluid and the agent" on lines 29-31 of p15 have any restricting effect on the scope of the claim. The nature of the "agent" is not clear (see also claim 1 above).

It appears that it is measurement of the amount of "a derivative of the compound" that

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03370

is intended and clarification of this would have been helped by insertion of the word "of" after "or" of the first line on p16. Furthermore, it is not clear what is meant by "a derivative of the compound".

**Claim 5**

Although the "fluid" of claim 4 could be taken as the antecedent of "first fluid", there is certainly no antecedent for "second fluid".

**Claim 6**

It is unclear how the "partition interface" can be a "third fluid".

**Claim 9**

It is not clear what is meant by a "barrier pug". Furthermore, it is not clear in what way this "barrier pug" is introduced.

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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(72) Inventors; and (75) Inventors/Applicants (for US only): <b>LAW, Brian [GB/GB]; Alderley Park, Macclesfield, Cheshire SK10 4TG (GB). MILLER, Bryan, James, Alan [GB/GB]; 75 Swasedale Road, Luton, Bedfordshire LU3 2UD (GB). TURNER, Christopher, Matthew [GB/GB]; 56 Waterside, Uxbridge, Middlesex UB8 2LQ (GB). SHAW, John, Edward, Andrew [GB/GB]; 45 Colne Avenue, West Drayton, Middlesex UB7 7AL (GB).</b>		Published <i>With international search report.</i>
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**(54) Title:** DEVICE**(57) Abstract**

The invention relates to a microfabricated device for use in measuring the physical properties of compounds, where the properties measured using such devices are those which involve partitioning of the compound between two phases, measuring partition coefficients, distribution coefficients, acid-base dissociation constants, solubility and vapour pressure. The device comprises a microfabricated conduit, in which two fluids flow creating at least two phases between which the compound may partition, and a detector for measuring the amount of compound in each or both fluids.

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International Application No

PCT/GB 99/03370

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 G01N30/00 G01N27/447 B01L3/00 B01J19/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 G01N B01L B01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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Patent family members are listed in annex.

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PCT/GB 99/03370

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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